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Abstract

This paper examines what parents value as they make choices among available charter schools, with primary attention to the racial mix of a school's students. We estimate conditional logit models of the charter school choices made by all parents in North Carolina who switched their child from a traditional public school to a charter school in 2014/15. Our findings that parents care about the school's racial mix of students and that such preferences differ by the race and income of the choosers highlight the pressures that lead charter schools to be racially imbalanced. Our models also include other factors that parents may value such as the distance to the charter, the school's academic performance, the services provided by the charter, such as subsidized lunch and transportation, and the school's mission and approach.

1. Introduction

Parental choice is at the center of the charter school movement. In contrast to most traditional public schools with specified attendance zones, all charter schools are schools of choice with no students assigned to them. Among the arguments for expanding parental choice are that parents have a right to choose schools for their children, that parental choice will lead to a better match between the educational needs and goals of their children and the schools they attend, or that parental choice will put competitive pressure on traditional schools and, thereby, spur them to become better. Given the centrality of parental choice to the charter school movement, the purpose of this paper is to enrich our understanding of what parents value as they make their choices among the charter school options.

Our use of data from North Carolina, a large southern state that has a significant minority population -- historically mainly African Americans but now one that includes Hispanics and other groups as well -- directed our attention to the value that parental choosers place on the racial mix of students in charter schools.¹ In prior research, we have highlighted the increasing racial imbalance across charter schools in the state (Ladd et al, 2017). In this paper, we estimate the revealed preferences of the families of North Carolina students who switched from a traditional public school to a charter school in the elementary or middle school grades for the 2014/15 school year. By estimating conditional logit models that include fixed effects for the traditional public school from which each switcher moved we can infer the value that families place on a variety of charter school characteristics for charters within a 25-mile radius. In addition to the racial mix of the students in each school, which is of primary interest in this study, our full models include controls for a number of charter school characteristics that are of interest in their own right and might be correlated with a school's racial mix.

¹ We use the term “racial” preferences throughout as a short-hand for preferences related to race or ethnicity. As we note below, we define minorities for the purpose of this analysis as black and other non-white students, excluding Asian students.

These include the academic performance of the school, the distance to the charter, whether the school provides transportation or lunch services, and the distinctive mission or approach of the school.

Charter schools were initially introduced in North Carolina in 1996, with a statewide cap of 100 schools. With the removal of the cap in 2011, the number has increased to over 150 and is continuing to increase. Charters are like traditional public schools in that they are publicly funded and are not allowed to charge tuition but they are like private schools in having extensive autonomy and in being schools of choice. That is, in contrast to most traditional public schools that have geographically defined enrollment zones, no students are assigned to charter schools. The advantage of using charter schools for this analysis is that we are able to define a plausible choice set for each chooser, where the choice set is defined in relation to the traditional public school that the child attended the prior year. We pay particular attention to parental preferences related to the racial mix of students in the school and the extent to which those preferences differ among subgroups of parents defined by their race and economic disadvantage.

We document first that minority and white parents who chose charter schools in North Carolina selected them from sets of charter schools that were almost identical with respect to the racial mix of their students. Despite this similarity of options, we find that minority families are far more likely to select elementary charter schools with student bodies that are largely minority and white families are even more likely to select charter schools with largely white student bodies. Similar, and even more pronounced, asymmetries arise at the middle school level. We use our conditional logit models to determine whether those patterns reflect the racial preferences of the groups or other correlated factors that may affect their choices. These other factors include considerations such as distance to the school, academic quality, school mission, and supply side policy measures such as whether the charter school provides transportation and subsidized school lunch. The main purpose of the modeling effort is to isolate the role of a school's racial mix from that of these other measurable factors. A second goal is

to explore the importance to choice decisions of a school's academic performance, independent of the racial mix of the school's students. A final goal is to shed light on the potential for policy actions to alter the choices that parents make.

Although we use empirical methods that are similar to those used in other recent studies of the revealed preferences of parents (see discussion in section 2), this paper differs in several ways. First, it focuses on revealed preferences for charter schools alone. Second, it is based on the actual charter schools to which children switch, rather than on preferences stated as part of an application process. Third, instead of focusing on choices within a single large city such as New Orleans or Washington, D.C., the study examines charter school choices throughout the state. Given that many of the charter schools in North Carolina are located outside cities and the state is large and varied, this statewide perspective sheds a broader perspective on parental preferences. Fourth, we examine asymmetry in preferences between minority and white students both with respect to the racial mix of students within the school and with respect to measures of school performance. Finally, we are able to document how the provision of transportation and lunch services affect the choice patterns.

The paper proceeds as follows. We review the relevant literature in section 2, describe the data in section 3, lay out the model in section 4, report the main results in section 5, and extend the model in section 6. The paper ends with a concluding discussion.

2. Existing Literature

A growing and increasingly rich body of research explores what parents value when they are making educational choices. We first review the main approaches and methodologies that have been used in the context of a variety of k-12 school choice environments to determine what parents value. We then turn to studies designed to determine the extent to which programs have increased segregation, with particular attention to racial segregation.

Measuring what parents value in K-12 educational choice contexts.

The simplest, but clearly not the best, approach to determining what aspects of schools parents value is to ask them. The standard conclusion from telephone or other surveys of parents conducted mainly in the late 1990s is that parents value academic quality (Armor and Peiser 1998). Moreover, some studies indicate that low-socioeconomic parents might value academic quality even more than their counterparts with higher income and more education (Kleitz et al. 2000). Although some surveys may be useful for understanding what types of skills – such as the development of critical thinking or test taking skills -- different groups of parents might value (see Zeelandelaar & Winkler eds, 2013), the usefulness of surveys of preferences is limited in the context of school choice decisions. Based on comparisons of the stated preferences of about 2500 Indianapolis parents whose children switched to 15 charter schools, for example, Stein et al, (2009) documented that even though many of the surveyed parents listed academic performance as their top priority, only about half the sample moved from a lower to a higher performing school. As the authors conclude, surveys are limited because respondents often answer in ways they believe are socially desirable. Further, the authors note that it is difficult for researchers to ask pointed questions about race, ethnicity and social class that may contribute to the actual school choices they make.

A better strategy is to use a revealed preference approach, that is, to infer parental preferences from the actions they take. In a clever early study that moves in this direction, Schneider and Buckley (2002) analyze the school characteristics that parents looked for through an official internet site to inform school choices as part of Washington, DC's choice program in the late 1990s. They find that while parents care somewhat about a school's academic characteristics, they also care about the demographic composition of the student body, a finding that highlights the role of peers in the school choice process. A similar finding emerges from a study that uses the size of charter school waitlists in Pennsylvania as a

proxy for parental preferences (Adzima, 2014). She finds that parents place a positive value on the academic performance of the charter, that they avoid charter schools with high proportions of students eligible for subsidized lunch, and that they favor schools that promote parental involvement and that stress academic achievement. She does not test directly for preferences related to a school's racial mix. Reback (2008) takes a more macro approach based on evidence from transfer applications across districts under Minnesota's open enrollment program. Although his simple estimates suggest that transfer applicants were seeking higher relative mean test scores, once he controls statistically for other district characteristics such as mean income and house values, he concludes the contribution of test scores to transfer demand is quite small.²

Recent research relies on the school choice preferences revealed by rank ordered school applications data. Examples of this approach appear in studies of the choice programs in England (Burgess et al. (2014)) and in the U.S. cities of New Orleans (Harris & Larson (2015)) and Lincove et al.(2018)); Washington DC (Glazer & Dotter (2017); and New York City Abdulkadiroglu et al.,(2017). In these studies, the researchers estimate conditional or ranked choice logit models based on the stated preferences of choosers for specific schools to determine how choosers (or subsets of choosers) value the various characteristics of schools. Unlike the English study (Burgess et al, 2014), in which the authors were forced to impute some of the choices because of missing information on the stated preferences, the studies of the U.S. cities all benefitted from centralized school application procedures closely linked to the school allocation process. Further, the application systems in all three cities were carefully designed to elicit true preferences by minimizing the incentives for strategic listing of school choices.

The various studies in this genre focus on different issues. In their study of school choice in New Orleans, where charter school now comprise a large share of all schools and parents can apply to as

²Of more potential policy relevance than the results on the demand side are the findings from his supplemental analysis of the determinants of rejections. In that analysis, he shows that the more advantaged districts are the ones most likely to reject transfer applications, thereby restricting the ability of families to access those districts.

many as eight schools, Lincove and her coauthors (2018) focus on the private versus public school choice. They conclude that many parents strongly prefer private schools to public schools, but also find that some characteristics of public schools make them able to compete for certain groups of students. Consistent with other research, they find that distance to a school matters to parents (closer schools are preferred), as does a school's academic performance (higher test scores are preferred) and its socioeconomic mix of students (more low-income students or special needs students are less preferred). The racial composition of schools plays little role in this study because the city's overall student population is predominately non-white. A separate study of choice in New Orleans (Harris & Larsen (2015) focuses attention on the relative values of academic quality, extra-curricular activities such as football and band, and indirect costs such as distance and the absence of after-school care. Perhaps because of these indirect costs, the authors find that the lowest income students appear to have weak preferences for school performance, a finding that is consistent with that of Hasting et al. (2009) in their study of public school choice in Charlotte, NC.

The study by Abdulkadiroglu et al., (2017) uses New York City's centralized high school assignment mechanism to determine the extent to which parents value school effectiveness. Their contribution is to replace a simple measure of school performance such as test scores that would be readily accessible to parents, with a sophisticated value-added measure that claim would be more indicative of school quality. Although parents appear to value school effectiveness based on this measure, once the researchers control statistically for peer quality, the relationship between preferences and school quality disappears. Thus, parents appear to care more about peers than about school quality.

A particularly ambitious study of this type uses data from Washington, D.C.'s common lottery on applicants to 200 public and charter schools. Included in the sample are all 23,000 students who opted

to leave their neighborhood schools at all three levels of schooling. Of these, 71 percent were African American, 14 percent were Hispanic and 11 percent were white. Using a rank-ordered logit model, they find that parents value distance (measured in various ways), student body composition (measured as percent of students from low income families and the percent of students with the same race as the chooser) and academic performance (measured by various indicators), although with considerable heterogeneity across choosers. They then use the estimates to simulate how various policy scenarios, such as removing capacity constraints on oversubscribed schools or closing low performing schools would affect school segregation by race and income.

Finally, in one section of a broader analysis of the racial implications of charters in North Carolina, Bifulco and Ladd (2007) report results from conditional logit models that are similar in spirit both to the models just described and to the models we report below. Their analysis is based on children in elementary and middle schools who switched from traditional public schools to a charter school in the years 2000/2001 and 2001/2002. A significant difference between that study and the studies described earlier is that the choices are the actual schools in which the children enrolled, rather than those that were stated as preferred in an application process. The authors conclude that the most preferred racial mix of students in charter schools for black families is between 40-60 percent black but for white families is less than 20 percent black (Bifulco and Ladd, 2007). The implication of these asymmetric preferences is that few charters will end up with racially mixed student populations. The present study further explores these asymmetries in the North Carolina context based on a much larger set of charter schools and a more complete set of school characteristics.³

³ In a more ambitious study along these same lines, but not restricted to charter schools, researchers used national survey data from the Early Childhood Longitudinal Study to match actual schools attended by sampled fifth graders in 2004 with other nearby schools including regular public schools, magnet schools, charter schools and various types of religious schools. The researchers estimated a modified conditional logit model that included a large range of household characteristics as well as school characteristics. Quite surprisingly in light of most charter school research, the researchers concluded that families do not choose a charter school because of its racial or ethnic composition and that race and ethnicity within a household do not influence its choice of charter schools (Butler, et

Effects of choice on racial segregation

Many studies have looked directly at how various forms of choice programs affect racial or other types of segregation. These studies typically use longitudinal data to examine how the availability of choice options, such as charter schools, vouchers for private schools, or open enrollment programs, affect the distribution of students across schools. A brief review of such studies helps to motivate our attention in this paper to the value parents place on the racial composition of charter schools.

The theoretical predictions of how charter schools will affect racial segregation are unclear. On the one hand, charter schools may increase racial segregation if members of different racial groups prefer to put their children in schools with other children of the same race. Further, that segregating effect will be exacerbated if at least one group, say white families, prefer to avoid schools with children of the other race. On the other hand, if the traditional public schools are already highly segregated, the availability of choice in the form of charter schools may give disadvantaged black or Hispanic students an opportunity to enroll in a less segregated school with higher achieving peers.

By following the movement of individual students to charter schools over time, Bifulco and Ladd (2007) concluded that charters increased segregation. Specially, they found that black students left public schools that were on average 53 percent black in favor of blacker charter schools, averaging 72 percent black students, and white students left public schools that were 18 percent white in favor of charters that were 25 percent white. Similar patterns have also emerged in other states and districts (Booker et al, 2005; Garcia, 2008; Weiher & Tedin, 2002; and Zimmer et al., 2009) but the pattern is not universal. In the highly racially segregated school systems of Chicago and Milwaukee, for example, researchers have found that black students have transferred to charter schools that are more racially

al, 2013). One possible explanation for this surprising finding is that fewer than 1 percent of the students in their sample attended charter schools.

balanced than the schools they left behind. In a recent study of the Little Rock metropolitan area, researchers found that transfers to charters reduced segregation somewhat in the traditional public schools, and did not increase overall segregation (Ritter et al, 2016).

How choice programs are likely to affect segregation may depend on their design, that is the conclusion of a study of three school choice programs in the San Diego Unified School District (Koedel et al. 2009). About one in five students participated in one of the district's three choice programs in 2001: a Voluntary Ethnic Enrollment program (VEEP), a magnet program, and an open enrollment program. The open enrollment program increased segregation by race and other measures, and the VEEP program decreased desegregation. The authors attributed the difference to the fact that VEEP program provided students with bus transportation while the open enrollment program did not. In the models we report below, we incorporate information on the availability of transportation and lunch services.

In a study of how Louisiana's state voucher program affected racial stratification, Egalite et al. (2017) highlight the benefits of defining a community-wide benchmark as the starting point for any study of the segregating effects of a choice program, but also the difficulty of measuring effects for a full sample of voucher users. In that program students from underperforming public schools receive scholarships to transfer to participating private schools. The analytic sample, which includes only students transferring from a traditional public school to a private school, and was reduced as a result of various other filters included only 1741 switchers, far below the close to 5000 voucher school users. The authors find that 82 percent of the transfers reduced racial stratification in the sending schools, but increased it somewhat in the receiving schools, with the patterns differing somewhat depending on the racial category of transfers. The study is noteworthy in part because it is a statewide study, and in part because it highlights the advantage we have in this paper, where we are able to include a much higher share of all switchers to charter schools.

3. Analytic Strategy

In a standard multinomial choice model, the analysis would typically focus on the characteristics of the choosers, such as their income, race, or gender, with the goal of determining which groups are more likely to favor one option over another. In the conditional logit model developed by McFadden (1974), the focus switches to the characteristics of the choice options rather than the choosers. In the present context, that means the characteristics of the charter schools, such as the racial mix of the students in the school, the achievement level of its students, the distance to the charter and various other characteristics that differ across schools. The choosers of interest in this case are the families who have opted to transfer their child from a traditional public school to a charter school. By choosing a specific charter with certain characteristics over other charter schools, the family is revealing its preferences for those characteristics over others. When many families make choices among charter schools that differ along a number of dimensions, it is possible to infer preferences from the estimated coefficients of the conditional logit model.

One convenient feature about working with charter school choices is that the set of charter schools available to each family is quite well defined. If travel distance to a charter were not an issue, in principle each family could choose any charter school in the state. Because distance matters, however, we have restricted each family's choice set to the charter schools located within 25 miles of the public school in which the child was enrolled in the previous year and control statistically for the distance to each charter school in the choice set.⁴ In the following explanation, we refer to the choice of charters offering elementary school grades, but similar logic applies to those offering middle school grades.

⁴ See data analysis below in which we justify this cut point by the fact that 95 percent of the chosen charters are within 25 miles.

Each family i who switches their child to an elementary charter school in a particular year from the j th traditional public school (TPS) has precisely the same set of charter schools from which to choose, namely the charter schools offering elementary grades within 25 miles of the public school. Families with children in a different traditional public school would have a different choice set which may or may not be overlapping with that of the families in the j th TPS.

Within a choice set, a parent has a choice of charter schools indexed $c = 1, \dots, n$.

Each parent i currently in the j th TPS could derive utility from each charter school as follows:

$$U_{ijc} = V_{ijc} + \varepsilon_{ijc}$$

where V_{ijc} is a deterministic linear function of the following form where X_{ijc} is a vector of charter school characteristics in the choice set of i th family switching from j th TPS:

$$V_{ijc} = X_{ijc}\beta$$

and ε_{ijc} is a random component of the utility.

We assume that the family chooses the charter that provides the highest utility over any other charter. That is school c will be chosen if:

$$\Pr(U_{ijc} > U_{ijt}), \text{ for } \forall t \neq c$$

Assuming the error is independent and identically distributed as a Type I extreme value distribution, the probability of a particular charter school being chosen is

$$P(\text{chosen} = 1)_{ijc} = \frac{\exp(\sum_{i \in I, j \in J} X_{ijc}\beta)}{\sum_{c \in C} \exp(\sum_{i \in I, j \in J} X_{ijc}\beta)}$$

which in turn can be estimated using a maximum likelihood procedure and interpreted as

$$\log\left(\frac{P_{ijc}}{1-P_{ijc}}\right) = \sum_{i,j=1}^{I,J} X_{ijc}\beta + \delta_j + \varepsilon_{ic} \quad (1)$$

Importantly, the model includes fixed effects (δ_i) for each traditional public school from which the switchers come. That means that the estimates of the vector β are based on variation in choices made by switchers from the same traditional public school, that is, those that have identical choice sets. That rules out most of the bias that would arise from inferences about preferences made from choice options that are clearly not available to a chooser such as those only available in a different part of the state.

Because of our interest in the extent to which the preferences of different racial and economic groups differ, as we discuss further below, we estimate the models separately by racial and economic subgroups.

Several points about this approach are worth noting. First, the model requires that the choice set of each chooser include at least two charter schools. Second, none of the charter schools should be such close substitutes that the switchers would be indifferent between them.⁵ Third, the use of fixed effects for each traditional public school means that one cannot include in the model any characteristics of the public schools from which the switcher is departing. The method does not rule out, however, testing for one or more interaction effects by type of public school. Fourth, some switchers have a richer set of choices than other choosers given the geographic distribution of the charter schools. In general, that should not matter as long as there are sufficient choices within each switcher's choice set. In some cases, however, limited choices along some dimensions of interest may lead to large standard errors and imprecise estimates. Finally, the basic model sheds no light on the factors that affect the family's initial

⁵ This assumption is referred to as the “independence of irrelevant alternatives.” It assumes that, in a choice between A and B, the presence of a third option, C, does not alter the relative odds of choosing between A and B. That is, the choice between A and B is a function of their characteristics, which is not altered by the presence of C. The assumption would not hold if C is a close substitute for A or B.

decision to take a child out of a traditional public school. In an extension to the basic model, however, we report results from models that show how parental choices of charters are affected by some key characteristics of the traditional public schools and speculate about the reasons for differences.⁶

One potential concern about this approach is that not all children who apply to a specific charter can be admitted if the charter school is oversubscribed. As a result, the chosen charter school that we use to infer preferences may not always coincide with the switcher's most preferred charter school. The fact that oversubscribed charter schools are required to accept students by lottery, however, substantially mitigates this concern. While it introduces error into the selection process, the error, at least in principle, affects all the choosers with the same choice set in the same way and should not bias the results.⁷ Of somewhat greater potential concern is that some choosers may have differing amounts of information about specific charter schools and may have more or less capacity to pursue a thoughtful search process among the charters in their choice set (Villavicencio, 2014). We address that concern in part by estimating the models for different subsets of choosers defined by their race/ethnicity and income. Within any subgroup of choosers, the ability of families to gather and process information should be relatively similar which makes it possible to isolate average preferences for each subgroup.

4. Descriptive Information and Data

As we mentioned in the introduction, the original cap of 100 charter schools in North Carolina was lifted in 2011. As of 2014-15 there were 149 charter schools, with 23 of them new in that year, and

⁶ See Long (2004) for an alternative two-stage approach in the context of college choice. She first estimates a logit model to explain the decision to go to college and then estimates a conditional choice model to determine what college characteristics students value. The challenge of that approach is to determine the variables that belong in the first stage. Importantly, as Long notes, the estimates of the conditional logit model will be consistent even if the decision to attend college at all is endogenous as long as one can assume the independence of irrelevant alternatives. Given that such an assumption is reasonable in the context of our charter choice model we focus this paper on the conditional choice model alone.

⁷ We explored the possibility of using information on the length of waitlists for individual charter schools as a proxy for the likelihood of being admitted through the lottery process to specific schools but the information we were able to gather for individual schools was incomplete and not reliable.

the total charter school student population was 69,961 – up from about 36,000 in 2009.⁸ In 2015, 21,521, or 31 percent of charter school students were enrolled in predominantly white charters (those that were less than 20 percent minority) and 14,605, or 21 percent, of students were enrolled in charter schools with more than 80 percent minority students.

We focus here on the families who moved their children from a traditional public school to a charter school serving elementary and middle school grades for the 2014-15 school year. We include all charter schools, except those that were newly established in that year. We exclude those charters because of the limited information parents would have had about them. Although parents might have some information from a school's website about its vision and goals, they would have had no information on the racial mix of the students or on the test scores of the students. All the data on students' movements, as well as charter school characteristics such as the racial mix of the charter schools and their academic performance levels come from the North Carolina Education Research Data Center (NCERDC). All charter school characteristics apply to the prior year, 2013-14. Other charter-specific data comes from charter school websites and parent handbooks.

The choice sets

To define the choice set for each switcher to a charter school, we first use Arc GIS to determine the straight-line distance between each relevant traditional public school and each charter. Although a case might be made for starting with each switcher's place of residence rather than the relevant public school, the required data on residential locations are incomplete. The use of the prior traditional public school has the advantage of allowing us to use fixed effects to specify switchers who have identical sets of charter schools from which to choose. Table 1 provides information on the distances to the chosen

⁸ As of 2017-18, the number of charter schools had increased to 173, with 15-20 more expected to open in the following year.

charter schools separately for elementary and middle school students for two racial groups of switchers: minorities (defined as black, Hispanic, and other non-Asian and non-white students) and white students.⁹ We exclude the small group of Asian switchers from this and all subsequent tables and analyses in order to focus on minority groups that are more likely than Asians and whites to be disadvantaged. The table shows that about 80 percent of the elementary school switchers and about 70-75 percent of the middle school switchers choose schools within 10 miles, with somewhat higher percentages for minority students than for white students. Only 3 or 4 percent choose schools that are more than 25 miles away from the current school, which makes 25 miles a reasonable boundary for each choice set.

The switchers

The starting point is all the students in charter schools in grades K-8 in 2014-15 who were observed in a traditional public school the previous year. That excludes new charter school students and students who came from a different charter school, from a home school, or from out of state. We then exclude from the analytic data set any switcher who does not have at least two charter schools in her choice set on the ground that we need to observe her choosing among charter options.

The sample of elementary school switchers includes 2,462 minority students and 1,783 white students.¹⁰ The minority switchers come from 571 traditional public schools and the white switchers from 562 schools.¹¹ The sample of middle school students, who transferred to a charter school within a 25-mile radius and have more than one choice of charter in their choice set, excluding switchers to new

⁹ Note that these figures are calculated from unrestricted samples that include switchers to new schools and those who have less than two choices of charters in their choice set.

¹⁰ In additional analyses we also estimated models for black students switchers alone who account for about two thirds of the minority switchers. The patterns for that group were sufficiently similar to those for the full group of minorities that we do not present those results here. We note in footnotes a few results that differ. We do not estimate separate models for Hispanic switchers because of concerns about the small sample size.

¹¹ These numbers are slightly lower in the full control model due to missing values on performance.

schools, includes 1,369 minority students and 1,218 white students from 497 and 548 traditional public schools respectively.

Table 2 disaggregates by grade level the children in the unrestricted sample who switched into elementary schools. The students in the kindergarten group include only those who were enrolled in a public pre-kindergarten program because to include them in the sample we need information on the public school from which they came. For the upper grades (grades 4-5 in Table 2A and grades 6-8 in 2B) for which we have student-level data on test scores and behavior, we are able to describe the switchers relative to the students in the same public schools from which they came who remained in a charter school. The table shows that the switchers into grades 4 and 5 have higher test scores and fewer absences than their former classmates, but have somewhat lower test scores and more absences than students already in charter schools. The patterns for grades 6-8 differ by grade. The 6th grade switchers – those who are switching to a new school at a logical switching point in the school career – have higher reading and math scores than their peers who remain in the public schools but, as was true, for the lower grades, their scores are below those of students already in the charter schools. The smaller numbers of 7th and 8th grade switchers, in contrast, have lower test scores and more days absent than their peers who remained in the traditional public schools.

Charter school characteristics that parents may value

We include in our full choice models five major characteristics of charter schools that parents may value: the racial mix of students, travel distance, academic performance, provision of lunch and transportation, and the school's mission. In addition, we include as control variables, the size of each charter (specified as the natural logarithm of enrollment) and whether the charter school is in a city, town, suburb, or rural area, and whether it was new in the prior year. The percentage of switchers living in cities differs greatly across races. About 70 percent of minority switchers to elementary grades live in

cities, compared to only 37 percent of white switchers. Among middle school switchers, about 63 percent of minority students and 28 percent of white students live in cities.

Racial mix of students in the charter school. Of central interest to this study is the value parents of different groups place on the racial mix of students in the charter schools. In particular, we are interested in whether the revealed preferences regarding the racial composition of a charter school's students differ by the race of the chooser. We classify charters into five categories based on the percentages of minority students in the school, starting with 0-20 percent minority and rising to 80-100 percent minority. The base category in all the models is 40-60 percent minority so that the estimated coefficients in the conditional logit models are interpreted relative to a reasonably balanced racial mix of students in a charter school.

For the purposes of the conditional logit model, it is important that the choice sets of both the minority and the white switchers include charter schools with a variety of racial mixes Table 3 addresses this issue by reporting distributional information in two ways. In Panel A, which reports the distribution of available charters, each entry is the number of charters included in the relevant choice sets that have the specified racial mix of students, expressed as a percentage of the aggregate number of charters in those choice sets. Both the numerator and the denominator of this percentage count many charter schools multiple times because of identical or overlapping choice sets.¹² That panel shows that minority switchers and white switchers at each level of schooling have very similar sets of schools to choose from and also that charters with 40-60 and 60-80 percent minority students are far less common than those with other racial mixes.

Panel B shows the distribution of the actual choices made by the switchers of each type. Striking differences emerge in this case, with minority switchers more likely to choose charters that are

¹² This aggregate for each subgroup (e.g. elementary or middle school minority or white switchers) corresponds to the number of observations in the tables of results reported below.

majority minority and white switchers more likely to choose charters that are less than 40 percent minority. Although these patterns are suggestive, it would be a mistake to infer preferences about the racial mixes of charters from these patterns alone because of the other charter school characteristics that may be correlated with a school's racial mix.

Distance to the charter school. One such factor is distance to the school. Given that local school districts do not provide public transportation to charter schools, parents must either provide their own, use public transportation, work with other parents or through the school to organize carpools, or use bus service provided by the charter school itself. Assuming the mode of transportation can be worked out, longer distances are still likely to be less appealing to families than shorter distances because of the bigger time commitment and greater inconvenience for the child and the family.

Table 4 reports average distances by racial group for both elementary and middle school switchers. The longer travel distances for white switchers than for minority students most likely reflect that a smaller proportion of the white switchers attend charters in cities, where travel distances are likely to be shorter. In any case, the full models are designed to shed light on the relative value that switchers of different types place on travel distance, and importantly, also to rule out any confounding effects that arise because of any correlation between travel distance and a charter school's racial mix of students.

Academic quality of the charter school. The extent to which parents value academic quality as they choose charter schools is central to one of the main arguments for charter schools, namely that they will improve the quality of education. They are expected to do that through some combination of the higher quality of specific charter schools and the competitive pressure that parental choice will place on other schools to improve. If parents do not make decisions based on school quality, it is hard to make the argument that charter schools will improve quality.

Extensive literature shows that disadvantaged minority children typically perform less well in school than more advantaged white children. As a result, the racial mix of a school might well be highly correlated with the academic performance of a school, either in fact, or as perceived by the switchers. Hence, we include measures of academic quality with the goal of sorting out preferences related to racial mix from those related to academic quality.

To this end, we include five categories of academic performance based on the percentages of students in the charter school achieving at or above grade level in reading and math. Similar to the racial mix variables, the categories range from 0-20 percent up to 80-100 percent, with the reference category being 40-60 percent. We use the charter school's prior year test scores. We rely on this measure of academic performance rather than a value-added measure of the type used by Abdulkadiroglu et al. (2017), which some people might view as a better measure of school quality, because this measure is more readily available to parents and is more likely to be the information they use to judge charter school quality.¹³

Table 5 provides information on the distribution of available charter school options (Panel A) and of actual choices (Panel B) by the five school performance categories. This table takes the same form as Table 3 but focuses on the performance categories rather than the racial mix categories. Similar to the earlier distributional table (Table 3), minority and white switchers have quite similar charter school options at both levels of schooling, but differ markedly in their actual choices, with white switchers far more likely than minority switchers to choose schools with high proficiency rates.

Charter school provision of transportation or lunch. NC charter school law does not require charters to provide transportation or lunch, but some schools provide them and others do

¹³ School test-based proficiency rates in reading and math are readily available in North Carolina, and are the central component of the state's A-F rankings of school quality that are highly publicized.

not. Of interest here is the extent to which the availability of transportation services (e.g., bus transportation or organized carpools) or of lunch services (e.g., prepared lunch or subsidized prepared lunch) is valued by parents and affects school choices differentially by subgroup. The policy concern is that by not offering services that are highly valued by disadvantaged families, some charter schools may be making themselves unattractive to such families, which would be inconsistent with a goal of having charter schools equally available to all families. Another issue is the extent to which some minority switchers choose high-minority schools in part because those are the schools that provide the lunch and transportation services that they highly value and not simply because of their racial preferences.

We compiled information on these services directly from the web sites of charter schools.¹⁴ Table 6 provides an overview of the extent to which each of these services are available in charter schools with different racial characteristics. Bus service, for example is most often provided in the highest minority schools, which is in sharp contrast to organized carpools that are more likely to be offered in charters with low proportions of minorities. Federally subsidized meals (as indicated by FRPL) are also much more likely to be available in the high minority schools than in other groups of schools. Although a charter school that offers subsidized meals would also be providing lunch, not all schools that provide lunch offer subsidized meals lunch under the federal program. As a result, the distribution of schools offering lunch is less skewed toward the minority schools than are those offering subsidized lunches.

Charter school missions. Some people support charter schools because they provide more educational options for parents. One question is the extent to which parents value the specific curricula or options that are offered relative to more generic offerings. Another is whether preferences,

¹⁴ We used information provided on the main web site as well as information from the Parent-Student Handbooks that were available on line. In a few cases, we telephoned the school to make sure that the information applied to the 2014/15 school year.

as revealed by the choices families make, differ by racial group. A third is the extent to which particular missions are unique to specific types of schools defined by the racial mix of their students. Based on a review of charter school mission statements and other information such as parent handbooks available on school websites, we developed the following non-distinct categories of charters.¹⁵ For each category, we report the average percent of minority students in such schools. Those shares are lowest in the schools we identified as having an innovative philosophy and highest in the schools identified as serving disadvantaged students.

- **Generic** These schools do not differentiate themselves in any specific way. (Minority share: 44.2%)
- **Innovative philosophy.** A school employs an unusual method and approach in delivering its curriculum, which may or may not have a unique focus. Examples include project- based learning, multi-sensory approaches, experiential or hands-on learning and inquiry-based instruction. (Minority share: 28.6%)
- **Innovative curriculum.** Schools that integrate visual, performing, or fine arts; have a strong emphasis on athletics; or add an unusual component to their core curriculum. This category is broad and a bit amorphous. (Minority share 45.3%)
- **STEM.** The school’s curriculum is infused with subjects in sciences, technology, engineering and math (STEM). Also includes STEAM (STEM plus art) and E-STEAM (STEAM plus entrepreneurship) (Minority share: 44.2%)

¹⁵ For charter schools in which a mission statement alone did not provide information on the specific approach pursued by the charter school, we consulted the entire website and additional Handbook sections. When we could not find any specific angle, we assigned the charter to the generic category. Many charters are classified under more than one of the non-generic categories.

- **Academically Disadvantaged.** Schools target student from “high risk”, low socioeconomic backgrounds; some use a “no excuses” approach, and direct instruction; includes KIPP schools. (Minority share: 75.3 %).

5. Estimated Patterns

We report results from various specifications of the conditional logit choice models. In all cases, we divide the charter school switchers into two racial categories: minority students and white students. Although members of the two groups may value some characteristics equally, we separate them because of our interest in inferring parental preferences related to the racial mix of students in a charter school, preferences that could differ based on the race of the family. In Table 7, we highlight the estimated coefficients for the charter school racial compositions alone for three increasingly complete model specifications. In subsequent tables we describe results for all the variables based on the full models, with the racial groups of switchers further subdivided by economic disadvantage. All the estimated coefficients we report come from models of the form of equation 1 above.

As is the case with all discrete choice models, the results can be presented in various forms. The most straightforward, albeit not the easiest form to interpret, is to report the estimated β s that come directly from equation 1. Each estimate then indicates the effect of a variable on the log of the odds of choosing a charter school, controlling for the other characteristics in the model. This form of presentation, which is the one we use in the following tables, offers two advantages. One is that the signs of the coefficients clearly signify the direction of association, and hence whether the characteristic is valued by the chooser. Specifically, a positive coefficient indicates that parents value that characteristic and a negative coefficient that they do not value it. The second advantage is that the standard errors reported in the table apply directly to those coefficients.

An alternative, and more common, way to present results is in terms of odds ratios, which can be calculated by exponentiating the log-of-the-odds estimates. An odds ratio can be readily interpreted as the odds of choosing a school with the specific characteristic relative to the odds of choosing one with base characteristic, all other factors held constant. An estimated coefficient of 0.5, for example, would become 1.694 ($=\exp^{(0.5)}$) and would imply that the odds of choosing a school with that particular characteristic would be 69 percent higher than the odds of choosing one with the base characteristics. Analogously, an estimated coefficient of -0.5 would become 0.607 ($=\exp^{-0.5}$), implying that the odds would be 40 percent less than the odds of choosing a school with the base characteristic. One disadvantage of this more common approach is that the reported standard errors do not match the reported odds ratios. A second is that all the odds ratios will be positive, with the cut point between a valued characteristic and an unvalued characteristic being an odds ratio of 1. As a result, the information that is likely to be of most interest for a study of this type, namely whether a characteristic is valued or not, emerges somewhat less clearly from the tables than is the case for the log of the odds.¹⁶

At the bottom of each of the following tables we report three key variables related to sample sizes. N indicates the total number of charter school choices within the relevant choice sets. This number, which is the sum of all the charters within each of the student-level choice sets, counts most charter schools many times because individual charter schools appear in the choice sets of many switchers. The number of groups refers to the number of traditional public schools the switchers come from and the number of observed choices is the number of switchers in the relevant category. The smaller is the number of switchers within a particular group relative to the number of groups the larger are likely to be the standard errors, and hence, the less precise the estimates.

¹⁶ A final way to present results from discrete choice models is to translate the coefficients into marginal impacts on probabilities. That may well be worthwhile to do in some specific cases, but is complicated in the context of multivariate models because the starting probability matters, which requires that the values of the other variables be specified to examine the impact of any one of them.

Parental preferences relating to the racial mix of students in charter schools

Table 7 allows us to focus on the racial mix variables alone for both elementary schools (Panel A) and middle schools (Panel B). In both panels, we report three sets of estimates for each racial group that apply to a charter's racial mix alone regardless of other variables in the model. The first set of estimates for each group of switchers come from models that include no other charter school characteristics, the second includes some basic control variables such as travel distance that constrain the available choices, and the third come from the complete models (that are reported in full in Tables 8 and 9 below). The base category refers to charter schools that are relatively evenly balanced in terms of the racial mix of their students, that is, those with 40-60 percent minority students.

We begin with the elementary school choices in the top panel of Table 7. Consider the first column in each set (columns 1 and 4). These estimates reflect choices made among charter schools within 25 miles of the switcher's TPS with no attention to factors other than the school's racial mix that might affect parents' choices. These results clearly indicate that minority parents make very different decisions among charter schools than white parents. In particular, the minority switchers shy away from the very white schools (coefficient of -1.063), and are most likely to choose schools that are 60-80 (coefficient of 1.207) percent minority. An estimated coefficient of 1.2, for example, indicates that the odds of choosing a school with that mix of students is about 3.3 times higher than the odds of choosing a school that is racially balanced. White parents, in contrast, are more likely to choose predominantly white schools (those that are either 0- 20 or 20- 40 percent minority) and to avoid the highest minority schools (those that are 80-100 minority).

The results in columns 2 and 5 are based on models that include key structural characteristics that may affect parental decisions, such as the distance between their traditional public school and the charter school, location type (such as city, town, suburb, or rural area), and the log of the charter school's enrollment. The control variables in the full model (see columns 3 and 6) include those variables along with other charter characteristics that parents may value such as the academic performance of the charter's students, whether the school provides lunch and transportation services; and the nature of the school's educational philosophy and mission.

Although the addition of the full set of control variables changes the coefficients on the racial mix variables somewhat the patterns remain quite similar to those in the models with no controls. Once again, they indicate that minority families are likely to shy away from predominantly white schools and to choose predominantly minority schools, while the pattern is reversed for the white families. Provided that the full set of controls adequately controls for the many factors that might be confounded with the racial mix variables, we can interpret the results in columns 3 and 6 as parental preferences. In particular, based on their choices we conclude that minority parents place the lowest value on charter schools that are 0-20% minority and the highest value on those that are 80-100 percent minority, with a monotonic increase in value between the two extremes.

The story for white parents is a bit more complicated. The patterns indicate that they value schools in which white children are in the majority (those that are <20 percent or between 20 and 40 percent minority) with little distinction between those two categories, and that they dislike schools that have more than 80 percent minority. Interestingly, though, their choices reveal that, controlling for other factors, some white families place a high value on charter schools that are 60-80 percent minority. A closer look at those white switchers helps to explain this unexpected pattern. Of the 42 white switchers who selected a charter school with this racial mix, 24 chose a single charter school (Invest Collegiate) in Charlotte, North Carolina, a school that just barely fits into the specified racial mix

category with 60.6 percent minority students. It also features relatively high average student test scores (in the 60-80 percentage range) but once again, just barely with 61.5 percent of its students at or above grade level. In addition, almost all of the switchers to this school came from traditional public schools that had a higher minority share than this school. Among the full 42 white switchers who switched to charter schools with 60-80 percent minority students, about two thirds came from traditional public schools that were less white than the charter to which they moved. Hence, it appears that many, but not all, of these switchers valued whiter school environments for their children. We return to the role of the racial mix of the traditional public schools in section 6 below.

At the middle school level (see panel B), we conclude from the model with full controls that minority students tend to avoid charter schools that are more than 40 percent white but appear to be indifferent between schools that have more than 40 percent minority students. White students, in contrast, prefer charter schools serving mainly white students and dislike schools that serve primarily minority students.

In sum, parents appear to care about the racial mix of a charter school. Moreover, the patterns of their preferences matters in ways that generate strong pressures for racially imbalanced charter schools. The only obvious exception is when white parents are able to find charter schools that are both relatively high performing and somewhat whiter than their former traditional public school. In such cases, some white parents appear to be willing to select majority minority charter schools.

Full results by racial group and economic subgroups for elementary schools

We provide more detailed findings based on the full models for switchers to elementary schools in Table 8. The first set of columns refer to all switchers, and the second two sets refer to economically

disadvantaged and more economically advantaged switchers, labeled low SES and high SES.¹⁷ The switchers in these two groups do not sum to the total number of switchers by racial category because SES data are available only for grades 3 and higher. Of interest is the extent to which the revealed preferences of the disadvantaged switchers differ from those of the more advantaged switchers, both with respect to the racial mix of students in the charter school and the various other characteristics that parents may value. We organize the following discussion by category of charter school characteristic.

Share of minority students. The estimates reported for all SES levels simply replicate those in the previous tables. We turn here to the findings for the SES subgroups. The data show that among the minority switchers, the low-SES families are more likely to avoid the whiter charter schools than are their higher-SES counterparts, and also more likely to end up in a school with more than 80 percent minority students. For these low-SES students, the coefficient of -2.811 for a school with 0-20 percent minority students translates into an odds ratio of 0.06 which indicates that their odds of choosing a school with less than 20 percent minority students are more than 90 percent lower than the odds of choosing a racially balanced school. This coefficient is far smaller than the comparable coefficient (-0.820) and its corresponding odds ratio of 0.44 for the higher-SES minority switchers. In addition, the low-SES minority switchers are more likely than their higher-SES counterparts to end up in a school with 20-40 percent minority students. In contrast, the high-SES minority families appear to be indifferent between that racial mix and a racially balanced school.

Further, the low-SES minority switchers are more likely than their higher-SES counterparts to choose a predominately minority school, one with more than 80 percent minority students. While the low-SES minority switchers appear to be indifferent between racially balanced charters and those that

¹⁷ The North Carolina Education Research Data Center has specifically requested that these categories be labeled economically disadvantaged or not, rather than the more common terms of eligibility or not for subsidized school meals. We use the term low SES as a shorthand for economically disadvantaged.

have a somewhat greater share of minority than white students, that racial mix (i.e., 60-80% minority) emerges as the preferred mix for the high-SES minority families. That type of school also emerges as the preferred racial mix for high-SES white switchers presumably for the reasons we discussed earlier. Despite this revealed preference for majority-minority schools, however, the high-SES white switchers clearly prefer to avoid charter schools that are predominately minority. We are reluctant to draw many conclusions about the white, low-SES switchers because their low numbers lead to large standard errors and low precision.

Average charter school performance. The patterns for white switchers are the clearest. The results for switchers aggregated across SES levels indicate that white families have a strong aversion to schools in which fewer than 40 percent of the students are performing at grade level. For that full group of white switchers, there appears to be a marginally significant preference for high-performing charter schools, those with more than 80 percent at grade level. A closer look at the subgroups indicates that it is the high-SES white switchers who prefer the high performing charters. Once again, the limited number of low-SES white switchers makes the results for the low-SES white group a bit unclear.

The patterns for the minority switchers are somewhat more complicated. The aggregate evidence indicates a small positive preference for schools with only 20-40 percent performance levels (with an estimate of 0.348) as well as a positive preference for schools with performance levels between 60 and 80 percent (with an estimate of 0.481), both relative to the base category. The disaggregated results by SES suggest that it may be the lower-SES families who have the stronger preference for the schools with performance in the 60-80 percent range.

What should one make of these estimates? First, they indicate that, once we control for other charter characteristics, including most importantly the school's racial mix of students, school

performance still matters to parents. Other models (not shown) indicate that if we do not control for the racial mix of a school's students we might conclude that minority choosers place virtually no value on schools with performance levels in the 60-80 percent or 80-100 range and conversely, that white switchers would appear to place a very strong value on such schools. But such results would be misleading in that they would fail to reflect the close correlation between racial mix and school performance. The results reported here indicate, in contrast, that minority switchers, and especially the low-SES minority switchers, do value academic quality and that the main interest of white parents is in avoiding schools with low average academic performance. A second conclusion is that parents in general appear to place no greater positive value on the academic performance of a school than on its racial mix of its students. They care about both.

Transportation and lunch services. As we noted earlier, charter schools in North Carolina are not required to provide transportation or lunch services although some do so. The estimated coefficients for transportation represent revealed preferences for two types of services: bus transportation and organized carpools relative to the base of no transportation services offered by the charter school. The entries show that economically disadvantaged minority parents place a positive value on bus service, with the coefficient (0.447) larger and more statistically significant than the comparable coefficient (0.326) for their higher-income counterparts, while white parents place no value on it. Both racial groups attach a positive value to the organization of carpools, but, not surprisingly, the strongest value emerges for high-SES whites, the switchers with parents who are most likely to own cars and to have the work flexibility to participate in carpools.

The base category for lunch services is that the charter provides no lunch services. One option is for the charter school to provide full-price lunches and another is for it to provide both full-price and federally subsidized lunches. Thus, the net value a group places on subsidized lunch can be derived from

the sum of the two estimated coefficients. For minority families, for example, the estimates from the aggregated SES groups indicate that they value the availability of lunch (coefficient of 1.050) and that they also value the availability of subsidized lunch (coefficient of 0.329). The aggregate effect of 1.379 on the log of the odds translates into the odds of choosing a school that offers subsidized lunch almost four times the odds of choosing a charter that does not provide any lunch services.¹⁸ In contrast, high-SES white families place a negative value both on the provision of lunch and on the availability of subsidized lunch. The combined estimates for that subgroup group is -1.051, which implies that the odds that a high-SES white switcher will choose a charter school offering subsidized lunch is about 65 percent lower than the odds of choosing a school that offers no lunch, all other factors held constant. We suspect that this negative valuation for high-SES white switchers, compared to the indifference of the low-SES white switchers, may reflect their desire to avoid schools that are trying to serve low-SES students.

School missions. One of the avowed purposes of charter schools is to promote innovation and to expand the set of pedagogical and educational options available to parents. The inclusion of school missions in the conditional logic model permits us to determine how parents value various types of options relative to a more generic school. The patterns are mixed. For example, neither minority nor white parents appear to value charters offering an innovative curriculum relative to schools offering a more generic curriculum, and that is especially true for high-SES whites. In contrast, both groups seem to value a school with an innovative teaching philosophy. Minority students appear to shy away from schools that advertise themselves as serving disadvantaged students and that is true for both high- and low-SES parents, all other factors held constant.¹⁹ As long as a charter school promoting itself as a STEM

¹⁸ We note that the value placed on subsidized lunch by the smaller group of black switchers alone (not shown) would be even greater than that for the minority group with the sum of the estimated coefficients equal to 1.879, implying an odds ratio of over 6.5.

¹⁹ This pattern is somewhat surprising but may reflect the variety of charters in this category, and their overlaps with other categories. The category includes several schools that are managed by the for-profit National Heritage

school was opened before the 2013 school year, it was attractive to minority parents but not to white parents. Those opened more recently were less attractive than generic schools to both groups of parents, perhaps because of the availability of less information with which to gauge potential quality.²⁰

Structural characteristics. We conclude the table with four structural characteristics: proximity of the charter to the switcher's traditional public school, the type of locality in which the charter school is located, the size of the charter, and whether the charter was opened in the 2013-14 school year.

The proximity variables indicate that both racial groups value proximity. In the aggregate, both groups prefer charter schools that are within 5 miles of their traditional public school relative to the base category of 5-10 miles. Greater distances are equally disliked by both racial groups, with at most small differences between the two SES categories. Locality measures (rural, town and suburb, with city as the base) have very little effect on the choices among elementary schools but as we will see below matter more for middle school choices. For both racial groups and all the subgroups, the size of the charter school (measured in logarithmic form) matters for school choices in the expected way. The larger is the charter school the more likely a switcher is to select it, all other factors held constant. Finally, we included an indicator for any charter school that was only recently opened in the prior academic year. The large positive coefficients reflect the fact that such schools are likely to have more available spaces than other charter schools.

Academies, a few schools specifically oriented toward students with disabilities, and a few that pursue a no-excuses approach.

²⁰ We included an interaction term for STEM schools for the 2013/14 years because 36 percent of the STEM schools were new in that year, a far higher percentage than for the other types of schools.

Full results by racial group and economic subgroups for middle schools

The comparable findings for middle school choosers are reported in Table 9. The estimates relating to racial share aggregated by SES repeat those in Table 7 (Panel B). New to this table is the breakdown by SES level and results for the full set of charter school characteristics. For minority switchers, the general patterns are similar across the SES groups, although low-SES switchers have a stronger aversion to the mainly white middle schools than their higher-SES counterparts. Emerging from the choices of the high-SES white switchers is their preference for mainly white schools and their aversion to the mainly minority schools. The low-SES white switchers also have a distaste for high-minority schools but evince no clear preference for primarily white schools.

For the other charter school characteristics, we highlight here only a few of the main findings. For academic performance, we find that, regardless of their race, the choices of high-SES switchers generally indicate a preference for charters with performance in the 40-60 percent range (as signified by the many negative signs on the other performance categories). In contrast, preferences for transportation and lunch services at the middle school level differ by racial and SES group. Low-SES minority parents place a positive value on bus services, while high-SES white parents place a negative value on it. In addition, low-SES minority parents value organized carpools at this level, while white subgroups place a negative value on that service. Similar racially differentiated patterns arise with respect to the lunch options. Minority parents, both low-SES and high-SES, value the provision of subsidized lunch while white parents, especially those with high-SES shy away from charter schools that offer lunch services. In terms of charter school missions, both racial groups have an aversion for innovative curricula relative to a more generic curriculum, and both low-SES groups have a preference for STEM oriented programs.

Summary of basic results

The patterns shown in Tables 8 and 9 indicate that racial and economic subgroups of parents have differing preferences for charter school characteristics. One interpretation of these findings might be that charter schools serve a useful purpose in that their flexibility allows them to tailor their academic offerings and the services they offer to meet the desires of different groups of parents. An alternative interpretation leads to a more critical view of charter schools. This more critical view emerges from the following three findings. One is that parents place a high value on the racial mix of students in a school, which means that charters will inevitably end up being racially imbalanced given that the two groups have differing patterns of preferences. Another is that the differing values that groups place on lunch and transportation services exacerbates the segregating effects of charter schools. The fact that charter schools are not required to provide such services means that they can make themselves more or less attractive to disadvantaged students by their decision about whether to offer them. Third, while innovative philosophies and curricula may be valued by some parents, the evidence suggests that many parents do not prefer them to a more generic model of schooling.

6. Role of TPS Characteristics

In this section we extend the analysis stratifying the models by the minority and performance characteristics of the traditional public schools (TPS) from which the switchers come. Recall that we exclude TPS characteristics from the basic models because our use of TPS fixed effects controls for all the measurable and measurable time-invariant characteristics of the traditional public schools. The characteristics of the traditional public school, and particularly its racial characteristics, from which a switcher comes may affect the estimated effects of preferences for a number of reasons. We document here some of the differences and speculate about possible explanations.

Table 10 reports results for subsamples of both elementary school switchers (Panel A) and middle school switchers (Panel B) with the subsamples defined by characteristics of the traditional public schools. The entries all come from the fully specified models shown in Tables 8 and 9 but with estimates reported here only for the racial mix characteristics of the charter schools. In both cases, we defined the subgroups of traditional public schools (TPS) exclusive of the middle category. That is, low-minority schools are those with less than 40 percent minority students and high are those with more than 60 percent minority students. Similarly, the performance TPS subgroups are those with less than 40 percent and those with more than 60 percent of students at grade level. The smallest subgroup is white switchers from low-performing traditional public schools at both levels of schooling, which makes the standard errors in those columns larger than in some of the other columns and the estimates less precise. (We have reversed the order of the columns for the performance subsamples for ease of comparison given that low minority public schools are likely to have relatively high performing students.) We focus the discussion here primarily on the different results for high and low minority public schools, but the patterns are generally similar across the performance categories.

At the elementary level, two patterns emerge. One is that, as shown in the first two rows of panel A, both white and minority switchers who leave low-minority traditional public schools are more likely than those leaving high minority schools to prefer charters with large proportions of white students (that is those, with 0-40 percent minority students). The second is that white switchers from high minority schools are far more averse to the charters with 80-100 percent minority students than are white switchers from low minority schools. The patterns are relatively similar at the middle school level.

These differences may reflect in part the fact that the traditional public schools from which students moved reflect prior decisions by parents -- either directly through their choice of a specific public school such as a magnet school or indirectly by choosing a residential neighborhood. As a result,

the families switching from low-minority schools may well have different preferences than those from high minority schools. A related explanation is differing information networks. That is, the parents of students in a TPS with a low percentage of minority students (and a correspondingly high percentage of white students) may have more information about charter schools serving mainly white students than switchers from high minority public schools. Such information may come directly from other parents in the school exploring charter school options or from other families in the neighborhoods that serve the school given that if the public school is disproportionately white (or minority) the neighborhood is mostly likely white (or minority) as well. As a result of these information networks, both minority and white students in low minority public schools may be more likely to choose mainly white charter schools than their counterparts in high minority public schools.

The second pattern -- the greater aversion to very high minority charters among white switchers from high-minority than from low-minority schools -- would be consistent with a desire of whites to move from high-minority public schools to charter schools with a lower proportion of minorities. A clearer test of that possibility, however, would require looking more closely at the difference between the racial mix of their original school and the charter school in which they end up. Descriptive data (not shown) indicate that white switchers from high and low minority traditional public schools have approximately similar proportions of high minority charter schools in their choice sets.²¹ Hence, differences between the charter school choice sets of the white switchers do not appear to account for the differentially greater aversion of switchers from the high minority traditional public schools toward predominately minority charter schools.

²¹ At the elementary level, the percent of available charter options with 80-100 percent minority students is 28.9 percent for white students from low minority traditional public schools and 28.2 percent from high minority schools. The comparable shares at the middle school level are 29.1 and 27.2 percent.

7. Discussion and Conclusion

Because parental choice is so central to the charter school movement, this paper aims to enrich our understanding of what parents value as they make their choices among charter schools. To that end, we estimate conditional logic models of the revealed preferences of North Carolina parents who switched their children from traditional public schools to charter schools for the 2014-15 school year. Our primary focus is on the extent to which parents make decisions about charter schools that correlate with the racial mix of students in the school and how those decisions differ by the race or ethnicity of the chooser. A secondary focus is on the value that parents place on the academic performance of the school, independent of the school's racial mix of students and other characteristics that parents may value. Finally, we shed light on the extent to which the availability of services such as transportation or free lunch are associated with parents' decisions.

Our first conclusion is that parents clearly seem to care about the racial mix of students in the schools they choose. Such a finding is not surprising in light of extensive prior research, some of which we highlighted in section 2, showing that parents care about a school's demographic characteristics when they are making choices about schools. This paper contributes to the literature by focusing specifically on the school's racial characteristics and documenting that such preferences are apparent even in models in which we carefully control for many other school characteristics that may influence their choices. The fact that parents care about a school's mix of students introduces externalities into the choice process in that the decisions of some families affect the options of other families.

A second and related conclusion is that the revealed preferences related to the racial mix of a school differ by the race of the chooser and also by the income of the chooser as proxied by the student's eligibility for free school meals. Our findings indicate that white parents appear to have much stronger preferences for white charter schools and often a strong aversion to predominately minority

charter schools, than do minority choosers, who prefer schools with more minority students. These differential preferences generate strong pressures for charter schools in North Carolina to end up racially imbalanced, with many charters serving mainly white students and other serving mainly minority students, which is observably the case. The implications for such racial imbalance for outcomes such as student achievement is beyond the scope of this paper (but see Ladd et al. (2017) for some evidence on that issue based on North Carolina charters, and Reardon (2017) for achievement differences by racial and economic segregation at the national level). Regardless of their impacts on achievement, however, a significant reason for concern about racially imbalanced schools is their undesirable social implications for the ability of white and minority children to learn to work and live together.

Although it may be tempting to attribute the patterns we describe here exclusively to racial prejudice -- on the part of both white and minority parents -- our findings shed no direct light on the motivations behind the preferences that their choices reveal. The patterns we observe may partly reflect a not-unreasonable desire of parents to enroll their children in schools with children that are similar to themselves in characteristics other than race, or the desire of children to go to school with their friends. In particular, we cannot rule out the possibility that what appears to be racial preferences in this study could still be confounded to some extent by preferences related to the economic characteristics of a school's students or to other school characteristics that we have not measured. None of those other variables, however, is likely to negate the basic conclusion of this study, namely that, whatever their motivations might be, white and minority choosers have asymmetric preference with respect to the racial mix of charter schools.

With respect to the value parents place on academic performance, we find that white switchers have a strong aversion to charters in which less than 40 percent of the students are achieving at grade level, and that in general they prefer high performing charters. The findings for minority choosers are a bit more complicated. In the absence of statistical controls for the racial mix of the schools, one might

conclude that minority choosers place virtually no value on schools with above- average performance levels. The evidence suggests, however, that independent of a school's racial mix, lower SES minority parents evince a positive preference for relatively high performing charter schools. Thus, we conclude that both a school's racial mix and its academic performance matter to parents.

In light of the patterns documented in this study, we believe policy makers have a special responsibility to design publicly funded choice programs, including but not limited to charter schools, in ways that would mitigate their contribution to the socially undesirable outcome of racially imbalanced schools. This study provides evidence about the importance of one set of policies that would be a start in that direction, namely requiring charter schools to provide transportation and subsidized lunches. Such services will help to make all charter schools more readily available to all students, including those with low income. Regardless of how desirable such policies may be, however, by themselves they are not likely to offset the strong pressures for racially segregated schools that emerge from school choice programs.

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Table 1. Distribution of Charter Choices by Distance (all switchers in 2014/15)

	Elementary		Middle School	
	Minority	White	Minority	White
Total # of observed choices*	3686	3499	1652	1664
Total # of choices observed (within 10 mi radius)	2969	2719	1260	1184
<i>% of students choosing beyond 10-mi radius</i>	19%	22%	24%	29%
Total # of choices observed (within 15 mi radius)	3323	3157	1468	1477
<i>% of students choosing beyond 15-mi radius</i>	10%	10%	11%	11%
Total # of choices observed (within 20 mi radius)	3484	3328	1555	1568
<i>% of students choosing beyond 20-mi radius</i>	5%	5%	6%	6%
Total # of choices observed (within 25 mi radius)	3536	3407	1599	1608
<i>% of students choosing beyond 25-mi radius</i>	4%	3%	3%	3%

Source. Calculated by authors with data from the North Carolina Education Research Data Center and geographic distances.

Note. Includes all switchers, including those who enrolled in new schools and those with only one charter in their choice set

Table 2A. Characteristics of Switchers, Stayers, and Students in Charter Schools
Elementary Grades

	Kindergarten		
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	-	-	-
Math (lag)	-	-	-
Days absent	-	-	-
N	489	22,146	230
	1st grade		
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	-	-	-
Math (lag)	-	-	-
Days absent	-	-	-
N	1,429	110,911	4,672
	2nd grade		
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	-	-	-
Math (lag)	-	-	-
Days absent	-	-	-
N	1,458	110,386	4,560
	3rd grade		
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	-	-	-
Math (lag)	-	-	-
Days absent	-	-	-
N	1,415	107,110	4,480
	4th grade		
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	0.1635	-0.0020	0.3075
Math (lag)	0.1274	0.0030	0.1955
Days absent	4.80	4.99	4.71
N	1,355	104,907	4,308
	5th grade		
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	0.1471	-0.0061	0.2267
Math (lag)	0.1347	0.0019	0.1326
Days absent	4.7722	5.0617	4.63
N	1,356	97,953	4,482
Total students	7,502	553,413	22,732

Source: Calculated by the authors with data from the North Carolina Education Research Data Center

Note: Switchers are those who are new to charter schools in 2014/15. TPS refers to Traditional Public Schools.

Table 2B. Characteristics of Switchers, Stayers, and Students in Charter Schools
Middle School Grades

6th grade			
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	0.0694	-0.0159	0.2211
Math (lag)	0.0700	-0.0078	0.1416
Days absent	5.12	5.14	4.70
N	2,037	104,882	4,368
7th grade			
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	-0.0556	-0.0104	0.2964
Math (lag)	-0.1237	-0.0031	0.2486
Days absent	6.39	5.66	4.86
N	776	106,467	5,036
8th grade			
	New To Charter	Remain in TPS	Already in Charter
Reading (lag)	-0.1538	-0.0053	0.3522
Math (lag)	-0.2267	0.0011	0.3113
Days absent	7.09	6.00	5.16
N	597	110,020	4,471
Total in Middle School	3,410	321,369	13,875

Source: Calculated by the authors with data from the North Carolina Education Research Data Center

Note: Switchers are those who are new to charter schools in 2014/15. TPS refers to Traditional Public Schools

Table 3. Distribution of Available Options and Actual Choices by Racial Mix of Charter Schools

	Elementary		Middle	
	Minority	White	Minority	White
Panel A. Distribution of available options. Percent of aggregate choices				
Percent Minority				
0 - 20 %	32.3	32.8	31.7	34.0
20 - 40 %	24.7	26.0	25.5	24.9
40 - 60 %	6.7	6.2	6.4	6.2
60 - 80 %	6.8	6.3	7.4	6.2
80 - 100 %	29.7	28.8	29.0	28.6
Aggregate # of choices	37,610	26,017	21,057	16,517
Panel B. Distribution of actual choices. Percent of switchers				
Percent Minority				
0 - 20 %	10.3	51.7	13.4	62.6
20 - 40 %	15.8	36.6	14.8	24.2
40 - 60 %	5.5	3.6	13.4	7.5
60 - 80 %	19.2	5.5	14.9	3.9
80 - 100 %	49.2	2.6	43.5	1.9
Total # of switchers	2,462	1,783	1,369	1,218

Source: Calculated by the authors with data from the North Carolina Education Research Data Center

Note: Percent minority refers to the mix of students in the charter school in the 2013/14 school year.

The options and choices are those for switchers to charter schools in 2014/15.

Table 4: Average Distances for Switchers, 2014/15

	Elementary		Middle School	
	Minority	White	Minority	White
Average distance to the chosen Charter	6.04	7.22	6.73	7.64
Average distance in miles to nearest chosen Charter	3.85	4.84	3.92	5.05
Average distance to the second nearest chosen Charter	5.42	6.84	5.72	7.11
Average distance to the farthest Charter within 25mi	22.84	22.48	22.82	22.44

Source: Calculated by authors with data from the North Carolina Education Research Data Center and geographic distances.

Note: Includes all switchers in our analytic sample.

Table 5. Distribution of Available Options and Actual Choices by School Performance Category

	Elementary		Middle	
	Minority	White	Minority	White
Panel A. Distribution of available charter options Percent of aggregate choices				
School performance category				
0 - 20 %	3.1	3.1	2.5	3.0
20 - 40 %	16.2	14.8	16.8	14.4
40 - 60 %	22.6	22.6	21.8	23.6
60 - 80 %	38.6	39.1	39.4	40.4
80 - 100 %	19.5	20.1	19.5	18.6
Aggregate # of choices	37,571	25,961	21,039	16,490
Panel B. Distribution of actual choices . Percent of switchers				
School performance category				
0 - 20 %	2.6	0.1	1.9	0.3
20 - 40 %	25.3	2.8	24.8	4.2
40 - 60 %	36.6	13.5	41.3	20.9
60 - 80 %	31.0	57.1	28.7	59.9
80 - 100 %	4.7	26.6	3.3	14.7
Total switchers	2,448	1,783	1,369	1,218

Source: Calculated by the authors from data from the North Carolina Education Research Data Center

Note: The performance categories refer to charter school proficiency rates in the 2013/14 school year. Switchers refer to the 2014/15 school year.

Actual and aggregate number of choices for minority students differ from the actual and aggregate number of choices for the same category in Table 3 due to missing performance data.

Table 6. Distribution of Available Charter Options by Services Offered, by Racial Mix

Bus Service Offered	Elementary		Middle	
	Minority	White	Minority	White
Percent Minority				
0 - 20 %	16.7	17.6	17.2	20.5
20 - 40 %	15.7	18.8	16.5	18.1
40 - 60 %	3.0	1.5	2.8	2.8
60 - 80 %	3.2	1.2	3.2	1.3
80 - 100 %	61.4	61.1	60.4	57.3
Aggregate # of choices	9,919	6,961	5,677	4,581
Carpool Organized	Elementary		Middle	
	Minority	White	Minority	White
Percent Minority				
0 - 20 %	49.1	48.3	49.4	48.6
20 - 40 %	29.3	30.9	31.6	29.8
40 - 60 %	13.2	12.7	11.6	12.5
60 - 80 %	0.0	0.0	0.0	0.0
80 - 100 %	8.4	8.1	7.5	9.1
Aggregate # of choices	11,516	8,057	6,218	5,071
FRPL Offered	Elementary		Middle	
	Minority	White	Minority	White
Percent Minority				
0 - 20 %	18.4	17.2	18.6	17.6
20 - 40 %	19.3	22.4	21.1	21.3
40 - 60 %	7.3	6.4	6.5	7.1
60 - 80 %	4.1	2.3	4.0	3.1
80 - 100 %	51.0	51.7	49.8	51.0
Aggregate # of choices	17,922	11,872	9,725	7,747
Lunch Offered	Elementary		Middle	
	Minority	White	Minority	White
Percent Minority				
0 - 20 %	33.5	33.9	34.7	34.7
20 - 40 %	23.8	25.4	23.6	24.6
40 - 60 %	5.0	4.6	5.2	4.7
60 - 80 %	4.9	4.2	5.3	4.3
80 - 100 %	32.7	32.0	31.1	31.7
Aggregate # of choices	28,665	19,292	15,940	12,501

Source: Calculated by the authors with data from North Carolina Education Research Data Center and information gathered from charter school web sites

Table 7: Cross-Model Comparison, by Race/Ethnicity of Switchers

Academic Year: 2014/2015

Panel A: Elementary School

	Minority			White		
	No Controls (1)	Limited Controls (2)	Full Controls (3)	No Controls (4)	Limited Controls (5)	Full Controls (6)
<i>Share of Minority Students</i>						
0 to 20%	-1.063** (0.116)	-0.755** (0.145)	-1.227** (0.178)	1.106** (0.145)	1.010** (0.165)	0.590** (0.182)
20 to 40%	-0.289** (0.110)	-0.369** (0.137)	-0.635** (0.166)	1.012** (0.147)	0.685** (0.168)	0.589** (0.180)
40 to 60% (base)	Base	Base	Base	Base	Base	Base
60 to 80%	1.207** (0.108)	1.696** (0.142)	1.460** (0.187)	0.283 (0.174)	0.966** (0.210)	2.157** (0.255)
80 to 100%	0.754** (0.099)	1.082** (0.128)	1.757** (0.171)	-1.898** (0.209)	-1.929** (0.230)	-1.018** (0.264)
N	37,610	37,610	37,516	26,017	26,017	25,961
N of groups	571	571	566	562	562	562
N of observed choices	2462	2462	2448	1783	1783	1783
Pseudo R ²	0.0747	0.347	0.378	0.0835	0.379	0.403
N dropped	0	0	94	0	0	56
N groups dropped	0	0	5	0	0	0

Panel B: Middle School

	Minority			White		
	No Controls (1)	Limited Controls (2)	Full Controls (3)	No Controls (4)	Limited Controls (5)	Full Controls (6)
<i>Share of Minority Students</i>						
0 to 20%	-1.922** (0.120)	-2.037** (0.150)	-1.375** (0.201)	0.566** (0.132)	0.338* (0.166)	0.907** (0.205)
20 to 40%	-1.511** (0.116)	-1.961** (0.141)	-1.243** (0.181)	-0.134 (0.142)	-0.503** (0.177)	0.182 (0.199)
40 to 60% (base)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
60 to 80%	-0.326** (0.116)	-0.139 (0.146)	-0.190 (0.211)	-0.852** (0.196)	-0.273 (0.239)	-0.154 (0.281)
80 to 100%	-0.462** (0.097)	-0.516** (0.118)	-0.189 (0.171)	-2.906** (0.251)	-2.727** (0.282)	-2.206** (0.315)
N	21,057	21,057	21,039	16,517	16,517	16,490
N of groups	497	497	497	548	548	548
N of observed choices	1369	1369	1369	1218	1218	1218
Pseudo R ²	0.0609	0.307	0.338	0.105	0.435	0.471
N dropped	0	0	18	0	0	27
N groups dropped	0	0	0	0	0	0

Standard errors in parentheses

** p<0.01, * p<0.05, + p<0.1

Note: The entries are the racial mix coefficients from the conditional logit models described in the text. The models with no controls include only the racial mix variables; the models with limited controls include those variables, plus a vector of distance variables, logarithm of school enrollment and location of charter in one of the four types of locality: city, suburb, rural or town. The Full models include all the variables shown in tables Table 8 & 9.

Table 8. Full models, by SES Switcher groups, Elementary School

Academic Year: 2014/2015

	All SES Levels		Low SES		High SES	
	Minority Full Controls (1)	White Full Controls (2)	Minority Full Controls (3)	White Full Controls (4)	Minority Full Controls (5)	White Full Controls (6)
Share of Minority Students						
0 to 20%	-1.227** (0.178)	0.590** (0.182)	-2.811** (0.384)	-2.066* (0.804)	-0.820** (0.302)	0.527* (0.261)
20 to 40%	-0.635** (0.166)	0.589** (0.180)	-1.862** (0.350)	-0.826 (0.737)	-0.330 (0.283)	0.559* (0.257)
40 to 60% (base)	Base	Base	Base	Base	Base	Base
60 to 80%	1.460** (0.187)	2.157** (0.255)	0.585 (0.408)	0.111 (0.980)	1.538** (0.321)	2.005** (0.369)
80 to 100%	1.757** (0.171)	-1.018** (0.264)	1.701** (0.334)	0.355 (0.852)	1.246** (0.301)	-1.467** (0.414)
Average Performance						
0 to 20%	-0.488* (0.226)	-4.254** (1.382)	0.002 (0.459)	1.784 (1.303)	-0.811+ (0.441)	-16.875 (327.765)
20 to 40%	0.348** (0.085)	-1.609** (0.289)	0.661** (0.163)	-2.033* (0.977)	0.344* (0.169)	-0.987* (0.397)
40 to 60% (base)	Base	Base	Base	Base	Base	Base
60 to 80%	0.481** (0.118)	0.098 (0.136)	0.997** (0.237)	0.839+ (0.474)	0.187 (0.211)	0.105 (0.210)
80 to 100%	0.055 (0.195)	0.314+ (0.162)	0.683 (0.469)	0.053 (0.724)	-0.080 (0.316)	0.670** (0.240)
Transportation Options						
No option (base)	Base	Base	Base	Base	Base	Base
Bus offered	0.333** (0.087)	0.100 (0.129)	0.447** (0.171)	0.219 (0.420)	0.326+ (0.167)	0.011 (0.206)
Carpooling Organized	0.242* (0.102)	0.441** (0.090)	-0.044 (0.234)	0.397 (0.419)	0.419* (0.168)	0.612** (0.126)
Lunch Options						
Bring own (base)	Base	Base	Base	Base	Base	Base
Full price	1.050** (0.121)	-0.039 (0.105)	1.159** (0.264)	0.531 (0.448)	0.961** (0.211)	-0.346* (0.151)
Subsidized	0.329** (0.114)	-0.477** (0.110)	0.300 (0.253)	-0.451 (0.447)	0.315 (0.196)	-0.705** (0.159)
School Mission						
Generic (base)	Base	Base	Base	Base	Base	Base
Innovative Philosophy	0.379** (0.080)	0.217* (0.084)	-0.148 (0.165)	-0.030 (0.364)	0.170 (0.143)	-0.145 (0.114)
Innovative Curriculum	-0.283** (0.100)	-0.566** (0.117)	-0.184 (0.219)	0.316 (0.520)	-0.424* (0.187)	-0.828** (0.167)
Academically Disadvantaged	-0.351** (0.083)	0.052 (0.157)	-0.406* (0.160)	0.203 (0.494)	-0.435** (0.157)	0.131 (0.230)
STEM	0.942** (0.177)	-1.040** (0.240)	0.953* (0.375)	1.490+ (0.845)	0.823** (0.307)	-0.758* (0.321)
Opened in 2013-14	1.839** (0.132)	1.088** (0.131)	1.968** (0.299)	1.899** (0.486)	2.056** (0.223)	1.443** (0.187)
STEM (opened in 2013-14)	-2.317** (0.287)	-1.184* (0.498)	-2.920** (0.615)	-6.675** (2.057)	-2.448** (0.507)	-2.927** (0.781)
Proximity						
Within 5 miles	1.205** (0.068)	1.302** (0.082)	1.028** (0.133)	1.238** (0.338)	1.104** (0.122)	1.305** (0.109)
Between 5 & 10 miles	base	base	base	base	base	base
Between 10 & 15 miles	-1.902** (0.096)	-1.952** (0.106)	-1.480** (0.187)	-2.959** (0.497)	-1.839** (0.165)	-1.956** (0.152)
Beyond 15 mi	-4.213** (0.135)	-3.794** (0.130)	-4.064** (0.264)	-4.120** (0.475)	-3.871** (0.246)	-3.855** (0.202)
Locality type						
City (Base)	Base	Base	Base	Base	Base	Base
Rural	-0.123 (0.159)	0.259 (0.158)	0.016 (0.330)	1.638** (0.589)	-0.579* (0.286)	0.281 (0.239)
Town	0.222 (0.196)	0.469* (0.213)	0.411 (0.376)	-0.183 (0.780)	0.035 (0.378)	0.652* (0.309)
Suburb	-0.043 (0.119)	-0.027 (0.093)	-0.340 (0.286)	0.890* (0.393)	0.023 (0.186)	-0.052 (0.130)
Size of Charter						
Log of Enrollment	0.878** (0.067)	0.715** (0.073)	1.230** (0.147)	1.584** (0.308)	0.892** (0.119)	0.744** (0.106)
N	37,516	25,961	10,086	1,697	11,100	14,501
N of groups	566	562	306	127	344	354
N of observed choices	2448	1783	692	164	669	868
Pseudo R^2	0.378	0.403	0.449	0.586	0.368	0.407
N dropped	94	56	12	7	5	18
N groups dropped	5	0	0	0	0	0

Standard errors in parentheses

** p<0.01, * p<0.05, + p<0.1

Note. Elementary school subsamples of low and high SES do not include switchers into grades kindergarten, 1 and 2. Switchers into those grades are included in the All SES category. Low SES is defined by eligibility for free and reduced price school meals; high refers to all other switchers. The entries are based on the full conditional logit models.

Table 9: Full models, by SES Switcher groups, Middle School

Academic Year: 2014-2015

	All SES Levels		Low SES		High SES	
	Minority Full Controls (1)	White Full Controls (2)	Minority Full Controls (3)	White Full Controls (4)	Minority Full Controls (5)	White Full Controls (6)
Share of Minority Students						
0 to 20%	-1.375** (0.201)	0.907** (0.205)	-1.614** (0.254)	-0.459 (0.391)	-0.810* (0.358)	1.348** (0.252)
20 to 40%	-1.243** (0.181)	0.182 (0.199)	-1.342** (0.223)	-0.638+ (0.363)	-0.842* (0.328)	0.519* (0.245)
40 to 60% (base)	Base	Base	Base	Base	Base	Base
60 to 80%	-0.190 (0.211)	-0.154 (0.281)	-0.206 (0.256)	-0.034 (0.446)	0.299 (0.404)	-0.181 (0.389)
80 to 100%	-0.189 (0.171)	-2.206** (0.315)	0.119 (0.203)	-1.326** (0.455)	-0.900** (0.337)	-2.846** (0.515)
Average Performance						
0 to 20%	-0.670* (0.333)	0.285 (0.639)	-0.338 (0.378)	1.002 (0.772)	-1.895* (0.882)	-12.260 (464.685)
20 to 40%	0.210+ (0.124)	-0.992** (0.314)	0.399** (0.142)	-0.541 (0.413)	-0.746* (0.302)	-1.543** (0.518)
40 to 60% (base)	Base	Base	Base	Base	Base	Base
60 to 80%	-0.587** (0.141)	-0.945** (0.155)	-0.688** (0.171)	-0.575* (0.285)	-0.521+ (0.272)	-1.082** (0.187)
80 to 100%	-1.677** (0.257)	-1.116** (0.175)	-2.621** (0.404)	-1.383** (0.411)	-1.085** (0.375)	-1.197** (0.200)
Transportation Options						
No option (base)	base	base	base	base	base	base
Bus offered	0.225* (0.111)	-0.843** (0.149)	0.394** (0.132)	-0.600* (0.258)	-0.041 (0.227)	-0.943** (0.186)
Carpooling Organized	0.490** (0.131)	-0.763** (0.113)	0.736** (0.166)	-0.824** (0.264)	0.161 (0.215)	-0.751** (0.128)
Lunch Options						
Bring own (base)	base	base	base	base	base	base
Full price	1.068** (0.150)	-0.291* (0.134)	0.969** (0.183)	0.134 (0.253)	1.192** (0.284)	-0.456** (0.161)
Subsidized	0.673** (0.145)	-0.284* (0.140)	0.472** (0.179)	-0.095 (0.282)	0.858** (0.274)	-0.460** (0.167)
School Mission						
Generic (base)	base	base	base	base	base	base
Innovative Philosophy	-0.079 (0.097)	0.117 (0.103)	-0.053 (0.117)	0.206 (0.218)	-0.162 (0.178)	0.092 (0.119)
Innovative Curriculum	-0.507** (0.158)	-0.755** (0.164)	-0.523** (0.191)	-0.816** (0.316)	-0.614* (0.311)	-0.655** (0.198)
Academically Disadvantaged	-0.190+ (0.104)	-0.700** (0.181)	-0.340** (0.120)	-0.629+ (0.330)	0.274 (0.219)	-0.562* (0.220)
STEM	0.743** (0.222)	0.896** (0.229)	0.860** (0.269)	1.528** (0.414)	-0.014 (0.439)	0.623* (0.288)
Opened in 2013-14	1.128** (0.161)	0.626** (0.150)	1.076** (0.203)	0.261 (0.325)	0.995** (0.272)	0.745** (0.171)
STEM (opened in 2013-14)	-4.035** (0.462)	-4.187** (0.611)	-4.116** (0.540)	-4.058** (1.058)	-3.284** (1.181)	-4.186** (0.738)
Proximity						
Within 5 miles	1.340** (0.087)	1.561** (0.111)	1.299** (0.103)	1.046** (0.230)	1.199** (0.162)	1.643** (0.128)
Between 5 & 10 miles	base	base	base	base	base	base
Between 10 & 15 miles	-1.242** (0.110)	-1.367** (0.116)	-1.329** (0.139)	-1.604** (0.255)	-1.133** (0.183)	-1.298** (0.133)
Beyond 15 mi	-3.258** (0.149)	-3.919** (0.163)	-3.246** (0.179)	-3.864** (0.299)	-3.224** (0.272)	-3.914** (0.198)
Locality type						
City (Base)	base	base	base	base	base	base
Rural	0.751** (0.178)	1.733** (0.183)	0.853** (0.220)	2.427** (0.354)	0.416 (0.327)	1.464** (0.223)
Town	1.629** (0.235)	0.593* (0.275)	1.640** (0.277)	1.245* (0.483)	1.538** (0.453)	0.281 (0.342)
Suburb	0.060 (0.158)	0.006 (0.123)	0.275 (0.212)	0.196 (0.268)	-0.268 (0.246)	-0.065 (0.142)
Size of Charter						
Log of Enrollment	0.505** (0.084)	0.329** (0.092)	0.581** (0.104)	0.315+ (0.180)	0.412** (0.149)	0.382** (0.109)
N	21,039	16,490	14,855	3,485	6,184	13,005
N of groups	497	548	397	235	249	431
N of observed choices	1369	1218	1002	324	367	894
Pseudo R ²	0.338	0.471	0.360	0.505	0.346	0.487
N dropped	18	27	14	12	4	15
N groups dropped	0	0	0	0	0	0

Standard errors in parentheses

** p<0.01, * p<0.05, + p<0.1

Note: Low SES switchers are those eligible for free and reduced price meals. High SES are all other switchers.

The entries are based on the full conditional logit models.

Table 10. Models for Subsamples Defined by TPS Characteristics

Panel A: Elementary School

	TPS Minority Level				TPS Performance Level			
	Low Minority TPS		High Minority TPS		High Performance TPS		Low Performance TPS	
	Minority	White	Minority	White	Minority	White	Minority	White
	Full Controls (1)	Full Controls (2)	Full Controls (3)	Full Controls (4)	Full Controls (5)	Full Controls (6)	Full Controls (7)	Full Controls (8)
<i>Share of Minority Students</i>								
0 to 20%	2.472* (1.059)	2.933** (0.606)	-2.325** (0.241)	-1.039** (0.326)	0.822+ (0.443)	2.964** (0.479)	-2.523** (0.471)	-1.289+ (0.719)
20 to 40%	2.664* (1.051)	2.893** (0.605)	-1.124** (0.208)	-0.634* (0.297)	0.991* (0.434)	2.732** (0.476)	-1.124** (0.418)	-0.440 (0.699)
40 to 60% (base)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
60 to 80%	3.861** (1.082)	3.559** (0.776)	1.659** (0.248)	2.363** (0.449)	2.718** (0.481)	3.787** (0.590)	0.638 (0.461)	0.327 (1.088)
80 to 100%	3.214** (1.073)	-0.124 (0.803)	1.824** (0.212)	-1.684** (0.411)	2.847** (0.487)	-0.595 (0.692)	1.705** (0.351)	-0.339 (0.773)
N	4,603	13,652	28,189	5,988	8,933	17,435	11,408	1,306
N of groups	157	283	301	167	196	281	121	59
N of observed choices	303	966	1821	411	535	1073	829	125
Pseudo R ²	0.359	0.418	0.403	0.431	0.351	0.412	0.473	0.592
N dropped	8	45	55	3	5	24	9	3
N groups dropped	0	0	3	0	1	0	1	0

Panel B: Middle School

	Minority Level				Performance Level			
	Low Minority TPS		High Minority TPS		High Performance TPS		Low Performance TPS	
	Minority	White	Minority	White	Minority	White	Minority	White
	Full Controls (1)	Full Controls (2)	Full Controls (3)	Full Controls (4)	Full Controls (5)	Full Controls (6)	Full Controls (7)	Full Controls (8)
<i>Share of Minority Students</i>								
0 to 20%	0.041 (0.584)	2.623** (0.380)	-2.082** (0.285)	-0.478 (0.383)	-0.502 (0.444)	1.445** (0.338)	-2.740** (0.467)	-3.631** (1.222)
20 to 40%	-0.199 (0.555)	1.598** (0.372)	-1.346** (0.228)	-0.318 (0.364)	-0.738+ (0.417)	0.443 (0.333)	-2.043** (0.374)	-2.118+ (1.103)
40 to 60% (base)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
60 to 80%	0.768 (0.694)	1.237* (0.549)	-0.127 (0.264)	0.048 (0.521)	0.270 (0.516)	0.420 (0.450)	-0.316 (0.438)	-0.960 (1.450)
80 to 100%	-0.136 (0.612)	-0.235 (0.565)	-0.181 (0.215)	-2.567** (0.486)	-0.497 (0.451)	-2.017** (0.509)	-0.325 (0.327)	-3.768** (1.312)
N	2,401	9,170	15,913	3,478	4,130	9,912	7,765	1,259
N of groups	108	274	286	145	138	256	142	59
N of observed choices	166	704	1008	254	230	627	570	120
Pseudo R ²	0.397	0.536	0.358	0.471	0.321	0.488	0.423	0.708
N dropped	9	18	6	3	5	14	4	1
N groups dropped	0	0	0	0	0	0	0	0

standard errors in parentheses

** p<0.01, * p<0.05, + p<0.1

Notes. Entries are coefficients on the racial mix variables in full models of the type reported in Tables 8 and 9, for the various subsamples of switchers in 2014/15..

Low and High Minority TPS are traditional public schools with less than 40 percent and more than 60 percent minority, respectively.

Low and High Performance TPS are those with proficiency rates below 40% and above 60%, respectively.